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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,410	01/15/2004	Joel Lynn Boles	020569-00901 (P203-1311-U)	6101
54487	7590	08/30/2006	EXAMINER	
JONES & SMITH, LLP THE RIVIANA BUILDING 2777 ALLEN PARKWAY, SUITE 800 HOUSTON, TX 77019-2141			KUGEL, TIMOTHY J	
			ART UNIT	PAPER NUMBER
			1712	

DATE MAILED: 08/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/758,410	Applicant(s) BOLES, JOEL LYNN	
	Examiner Timothy J. Kugel	Art Unit 1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 July 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-14 and 16-48 is/are pending in the application.
- 4a) Of the above claim(s) 11, 23 and 35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-14, 16-22, 24-34 and 36-48 is/are rejected.
- 7) ☒ Claim(s) 4, 16, 26 and 28 is/are objected to.
- 8) ☒ Claim(s) 1-14 and 16-48 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7/13/2004</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. Claims 1-14 and 16-48 are pending as amended on 13 July 2006, claim 15 being cancelled. Claims 11, 23 and 35 are withdrawn from consideration.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Election/Restrictions***

3. Applicant's new claims 39, 40 and 44 and amendment to claims 16-25, directing the claims to a method classified in class 166 subclass 271 has eliminated the need for the restriction requirement detailed in the prior Office action, which has been withdrawn.

Claims 16-22, 24 and 25 have been rejoined and have been fully examined with the results detailed below.

Claims 11, 23, and 35 remain withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim.

### ***Information Disclosure Statement***

4. The information disclosure statement submitted on 13 July 2006 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner has considered the information disclosure statements.

Please note that due to the poor quality of the faxed document, the reference listed on the information disclosure statement was construed to be US Patent 6,849,581 (Thompson hereinafter).

### ***Drawings***

5. Applicant's argument, filed 13 July 2006, with respect to the identification of the term 'BXX" in Example 1 has been fully considered and are persuasive.

The objection to the drawings has been withdrawn.

### ***Specification***

6. Applicant's amendments to the specification, filed 13 July 2006, has been entered.

### ***Claim Objections***

7. Applicant's amendment, filed 13 July 2006, with respect to including the term "the formula" to claims 13 and 37 has been fully considered and are corrective.

The objection to claims 13 and 37 has been withdrawn.

8. Claim 26 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim, or amend the claim to place the claim in proper dependent form, or rewrite the claim in independent form.

Claim 26—as construed in relation to the rejection under 35 U.S.C. 112, second paragraph, below—recites, “The method of claim 45 39, further comprising a gel breaker.” However, claim 39, from which claim 26 depends, already recites the limitation of comprising a gel breaker, therefore claim 26 fails to further limit claim 39.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claim 45 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim contains subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention.

Claim 45 recites the limitation, “having less than 1% of the acrylamide groups in the form of carboxylate groups”; however, the original disclosure defines partially hydrolyzed polyacrylamide as an acrylamide polymer having ***at least*** 1%, but not 100%, of the acrylamide groups in the form of carboxylate groups (emphasis added, Specification Page 6 Lines 5-13). This is a new matter situation.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 19-22, 24-26, 45, 47 and 48 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 19, 21, 24 and 26 each recites the limitation "of claim 15". There is insufficient antecedent basis for this limitation in the claim since claim 15 has been cancelled. For the purpose of examination, each of claims 19, 21, 24 and 26 were construed to recite "of claim 39".

Claim 45 each recites the limitation "the polyacrylamide". There is insufficient antecedent basis for this limitation in the claim. For the purpose of examination, claim 45 was construed to recite "the synthetic polymer".

Claims 47 and 48 each recites the limitation "the amount of acid". There is insufficient antecedent basis for this limitation in the claim and it is unclear if this limitation refers to the lactic acid or the aqueous acid. For the purpose of examination, each of claims 47 and 48 were construed to recite "the amount of aqueous acid".

***Claim Rejections - 35 USC § 102 and 35 USC § 103***

11. Applicant's amendment, filed 13 July 2006, with respect to requiring the method step of injecting at a pressure sufficient to form fractures in the formation has been fully considered and overcomes the prior art.

The rejection of claims 1, 7, 9, 12, 27, 31, 33 and 36 under 35 U.S.C. 102(b) as being anticipated by US Patent 4,460,751 (Hanlon hereinafter) has been withdrawn.

The rejection of claims 2, 3, 10 and 34 under 35 U.S.C. § 103(a) as being unpatentable over Hanlon in view of US Patent 4,917,186 (Mumallah) has been withdrawn.

12. Applicant's argument, filed 13 July 2006, with respect to Kerver failing to teach a specific amount of lactic acid in the composition has been fully considered and overcomes the prior art.

The rejection of claims 4 and 28 under 35 U.S.C. § 103(a) as being unpatentable over US patent 4,624,795 (Dawson hereinafter) in view of US 3,481,400 (Kerver hereinafter) as evidenced by Lactic Acid Relative Density, 2001, [www.inchem.org/documents/icsc/eics0501.htm](http://www.inchem.org/documents/icsc/eics0501.htm) (InChem hereinafter) has been withdrawn. The rejections of claims 5, 6, 29 and 30 are maintained since although Kerver does not provide a teaching of the specific amount of lactic acid present, since it teaches the lactic acid is present it still reads on the limitations of less than 80, less than 50 and less than 25 lbs of lactic acid per 1,000 gallons of fluid.

13. Claims 1-3, 5-7, 9, 12, 13, 27, 29-31, 33, 36 and 37 stand and new claims 42, 43, 45-47 and 48 are rejected under 35 U.S.C. § 103(a) as being unpatentable over US patent 4,624,795 (Dawson hereinafter) in view of US 3,481,400 (Kerver hereinafter) as evidenced by Lactic Acid Relative Density, 2001, [www.inchem.org/documents/icsc/eics0501.htm](http://www.inchem.org/documents/icsc/eics0501.htm) (InChem hereinafter).

Dawson teaches a process to fracture-acidize a carbonate—specifically a limestone or dolomite—formation comprising injecting a composition (Column 1 Lines 5-16) comprising an aqueous acid—including from 14.9% to 27.8% hydrochloric acid (Column 1 Lines 17-33 and Examples 2 and 3), a copolymer comprising acrylamide and acrylamidomethylpropane sulfonic acid (Column 1 Lines 61-64 and Claim 4 Column 11 Lines 59-62), and gelling the composition using zirconium compounds (Column 1 Line 63 – Column 2 Line 4) at temperatures up to 120°C—248°F (Column 2 Lines 35-37).

Dawson does not disclose expressly the use of lactic acid in the process.

Kerver discloses a composition for treating a well (Column 1 Lines 14-27) comprising lactic acid at levels of about 165 gallons of a 30% solution of acid with 130 barrels of water (Column 3 Lines 43-47 and 65-70 and Column 4 Lines 52-55). This calculates to about 90 pounds of lactic acid per 1,000 gallons of water using the specific gravity of lactic acid of 1.2 as shown by InChem and standard conversions.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the lactic acid of Kerver in the process of Dawson. The motivation to do so would have been to eliminate plugging caused by iron oxide or iron sulfide (Kerver Column 3 Lines 38-47).

Since Dawson and Kerver combine to teach the same composition used in the same manner as claimed, one of ordinary skill in the art at the time the invention was made would have expected that the ability of the composition to retard or prevent the crosslinking of the synthetic polymer of the composition would intrinsically be the same as claimed.



Pertaining specifically to claim 46, the limitation requiring the synthetic polymer to be an emulsion polymer is viewed as product-by-process limitation and hence the methods the synthetic polymer is created by is not pertinent, unless applicant can show a different product is produced.

14. Claims 8 and 32 stand and new claim 41 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Dawson in view of Kerver as applied to claims 1-3, 5-7, 9, 12, 13, 27, 29-31, 33, 36, 37, 42, 43, 45-47 and 48 described above in further view of US Patent 4,752,404 (Burns hereinafter).

Dawson and Kerver combine to teach a process to fracture-acidize a carbonate—specifically a limestone or dolomite—formation comprising injecting a composition comprising an aqueous acid—including from 14.9% to 27.8% hydrochloric acid—a copolymer comprising acrylamide and acrylamidomethylpropane sulfonic acid, and lactic acid and gelling the composition using zirconium compounds at temperatures up to 120°C—248°F.

Since Dawson and Kerver combine to teach the same composition used in the same manner as claimed, one of ordinary skill in the art at the time the invention was made would have expected that the ability of the composition to retard or prevent the crosslinking of the synthetic polymer of the composition would intrinsically be the same as claimed.

Dawson and Kerver do not disclose expressly including formic or acetic acid in the composition.

Burns discloses a composition useful for fracturing or acidizing subterranean formations (Column 1 Lines 4-12) comprising a copolymer of acrylamide and sodium 2-acrylamido-2-methylpropane sulfonate (Column 1 Lines 40-59) and an acid—including hydrochloric acid, formic acid, acetic acid or mixtures thereof (Column 2 Lines 32-40) and crosslinked with a compound comprising zirconium (Column 2 Lines 41-56).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use a combination of hydrochloric acid with acetic and/or formic acid in the process of Dawson and Kerver, since it has been held that it is *prima facie* obviousness to combine two components each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the same purpose. *In Re Kerkhoven*, 205 USPQ 1069, 1072 (CCPA 1980); and *Ex Parte Quadranti*, 25 USPQ2nd 1071 (Bd. Pat. App. & Inter. 1992).

15. Claims 10 and 34 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Dawson in view of Kerver as applied to claims 1-3, 5-7, 9, 12, 13, 27, 29-31, 33, 36, 37, 42, 43, 45-47 and 48 described above in further view of Mumallah.

Dawson and Kerver combine to teach a process to fracture-acidize a carbonate—specifically a limestone or dolomite—formation comprising injecting a composition comprising an aqueous acid—including from 14.9% to 27.8% hydrochloric acid—a copolymer comprising acrylamide and acrylamidomethylpropane sulfonic acid, and lactic acid and gelling the composition using zirconium compounds at temperatures up to 120°C—248°F.

Since Dawson and Kerver combine to teach the same composition used in the same manner as claimed, one of ordinary skill in the art at the time the invention was made would have expected that the ability of the composition to retard or prevent the crosslinking of the synthetic polymer of the composition would intrinsically be the same as claimed.

Dawson and Kerver do not disclose expressly crosslinking with an agent that includes aluminum and zirconium.

Mumallah discloses a process for altering the water permeability of subterranean formations comprising crosslinking a copolymer of acrylamide and sodium 2-acrylamido-2-methylpropane sulfonate at temperatures in the range of from about 160°F to about 210°F with a polyvalent metal cation selected from aluminum, zirconium and mixtures thereof as detailed above.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the combined aluminum/zirconium crosslinking agent of Mumallah in the process of Dawson and Kerver, since it has been held that it is *prima facie* obviousness to combine two components each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the same purpose. *In Re Kerkhoven*, 205 USPQ 1069, 1072 (CCPA 1980); and *Ex Parte Quadranti*, 25 USPQ2d 1071 (Bd. Pat. App. & Inter. 1992).

16. Claims 14 and 38 stand, rejoined claims 17-18, 20, 21, and 24-26 and new claims 39, 40 and 44 are rejected under 35 U.S.C. § 103(a) as being unpatentable over

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Dawson in view of Kerver as applied to claims 1-3, 5-7, 9, 12, 13, 27, 29-31, 33, 36, 37, 42, 43, 45-47 and 48 described above in further view of European Patent Application Publication EP 0275624 (Jacobs hereinafter).

Dawson and Kerver combine to teach a process to fracture-acidize a carbonate—specifically a limestone or dolomite—formation comprising injecting a composition comprising an aqueous acid—including from 14.9% to 27.8% hydrochloric acid—a copolymer comprising acrylamide and acrylamidomethylpropane sulfonic acid, and lactic acid and gelling the composition using zirconium compounds at temperatures up to 120°C—248°F.

Since Dawson and Kerver combine to teach the same composition used in the same manner as claimed, one of ordinary skill in the art at the time the invention was made would have expected that the ability of the composition to retard or prevent the crosslinking of the synthetic polymer of the composition would intrinsically be the same as claimed.

Dawson and Kerver do not disclose expressly the use of a gel breaker.

Jacobs discloses a fracture acidizing fluid (Column 1 Lines 5-12) comprising an acid (Column 2 Lines 9-11), a zirconium crosslinking agent (Column 4 Lines 6-13), a copolymer of acrylamide and the sodium salt of acrylamidomethylpropane sulfonic acid (Column 4 Lines 47-50), lactic acid (Column 5 Lines 9-31) and a gel breaker (Column 3 Lines 3-5 and Column 5 Line 41 – Column 6 Line 16).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use the gel breaker of Jacobs in the process of Dawson and Kerver.

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The motivation to do so would have been to control the viscosity of the composition (Jacobs Column 3 Lines 3-5).

17. Rejoined claim 19 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Dawson in view of Kerver in further view of Jacobs as applied to claims 14, 16-18, 20, 21, 24-26, 38, 39, 40 and 44 detailed above in further view of Burns.

Dawson, Kerver and Jacobs combine to teach a process to fracture-acidize a carbonate—specifically a limestone or dolomite—formation comprising injecting a composition comprising an aqueous acid—including from 14.9% to 27.8% hydrochloric acid—a copolymer comprising acrylamide and acrylamidomethylpropane sulfonic acid, lactic acid and a gel breaker, and gelling the composition using zirconium compounds at temperatures up to 120°C—248°F.

Since Dawson, Kerver and Jacobs combine to teach the same composition used in the same manner as claimed, one of ordinary skill in the art at the time the invention was made would have expected that the ability of the composition to retard or prevent the crosslinking of the synthetic polymer of the composition would intrinsically be the same as claimed.

Dawson, Kerver and Jacobs do not disclose expressly including formic or acetic acid in the composition.

Burns discloses a composition useful for fracturing or acidizing subterranean formations (Column 1 Lines 4-12) comprising a copolymer of acrylamide and sodium 2-acrylamido-2-methylpropane sulfonate (Column 1 Lines 40-59) and an acid—including

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hydrochloric acid, formic acid, acetic acid or mixtures thereof (Column 2 Lines 32-40) and crosslinked with a compound comprising zirconium (Column 2 Lines 41-56).

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use a combination of hydrochloric acid with acetic and/or formic acid in the process of Dawson, Kerver and Jacobs, since it has been held that it is *prima facie* obviousness to combine two components each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the same purpose. *In Re Kerkhoven*, 205 USPQ 1069, 1072 (CCPA 1980); and *Ex Parte Quadranti*, 25 USPQ2d 1071 (Bd. Pat. App. & Inter. 1992).

18. Rejoined claim 22 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Dawson in view of Kerver in further view of Jacobs and Burns as applied to claim 19 detailed above in further view of Mumallah.

Dawson, Kerver, Jacobs and Burns combine to teach a process to fracture-acidize a carbonate—specifically a limestone or dolomite—formation comprising injecting a composition comprising an aqueous acid—including from 14.9% to 27.8% hydrochloric acid with acetic and/or formic acid—a copolymer comprising acrylamide and acrylamidomethylpropane sulfonic acid, lactic acid and a gel breaker, and gelling the composition using zirconium compounds at temperatures up to 120°C—248°F.

Since Dawson, Kerver, Jacobs and Burns combine to teach the same composition used in the same manner as claimed, one of ordinary skill in the art at the time the invention was made would have expected that the ability of the composition to

retard or prevent the crosslinking of the synthetic polymer of the composition would intrinsically be the same as claimed.

Dawson, Kerver, Jacobs and Burns do not disclose expressly crosslinking with an agent that includes aluminum and zirconium.

Mumallah discloses a process for altering the water permeability of subterranean formations comprising crosslinking a copolymer of acrylamide and sodium 2-acrylamido-2-methylpropane sulfonate at temperatures in the range of from about 160°F to about 210°F with a polyvalent metal cation selected from aluminum, zirconium and mixtures thereof as detailed above.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use the combined aluminum/zirconium crosslinking agent of Mumallah in the process of Dawson, Kerver, Jacobs and Burns, since it has been held that it is *prima facie* obviousness to combine two components each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition to be used for the same purpose. *In Re Kerkhoven*, 205 USPQ 1069, 1072 (CCPA 1980); and *Ex Parte Quadranti*, 25 USPQ2d 1071 (Bd. Pat. App. & Inter. 1992).

#### ***Allowable Subject Matter***

19. Claims 4, 16 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The prior art, particularly Kerver, does not disclose or fairly suggest a process as claimed using lactic acid present at between about 10 and about 1,000 lbs per 1,000 gallons of fluid.

### ***Response to Arguments***

20. Applicant's further arguments filed 13 July 2006 have been fully considered but they are not persuasive.

Applicant argues that the tertiary references to Dawson in view of Kerver fail to cure the deficiencies of Kerver, specifically that Kerver fails to teach a specific amount of lactic acid in the composition; since Kerver does teach the presence of lactic acid which reads on the limitations of the rejected claims as stated above, the rejections are proper.

### ***Conclusion***

21. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the



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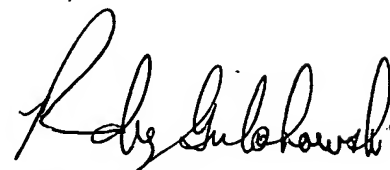
shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J. Kugel whose telephone number is (571) 272-1460. The examiner can normally be reached 6:00 AM – 4:30 PM Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

23. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TJK  
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RANDY GULAKOWSKI  
SUPERVISORY PATENT EXAMINER  
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